

ABSTRACT

A discrete low-noise amplifier designed to operate in a mobile wireless environment uses two cascaded GaAs FETs to achieve 25 dB gain and 0.9 dB noise figure at 2.5 GHz. Active bias control circuitry responsive to monitored amplifier output power automatically and continuously adjusts the drain-source currents, and the load lines, of the cascaded FETs to (i) maintain power consumption at 33 milliwatts in nominal small-signal conditions, and to (ii) provide an elevated input third-order intermodulation intercept point (IP3) and a reduced noise figure during the presence of jamming. A 15 dB improvement in the input IP3 is achieved in large-signal operation. Amplifier operation is supported by an a.c. power detector of enhanced sensitivity and responsiveness because of un-grounded operation.

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